



Paul David Hurd, Jr., 1921–1982

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KARL V. KROMBEIN¹ AND E. GORTON LINSLEY²

Paul David Hurd, Jr., son of Paul David Hurd and Ruth Dorothea Bick, was born in Chicago, Illinois, on April 2, 1921, and died of a heart attack on March 12, 1982, at George Washington University Hospital, Washington, D.C.

In his early days his family moved to an extremely modest home on the Mojave Desert in California. Neither of his parents had had much formal education and were unable to encourage Paul's early interest in natural history nor to provide any financial support for his education. Nevertheless, he attended Colton Union High School, Colton, California, transferring to Newport Harbor Union High School, Newport Beach, California. One of his teachers took a great interest in Paul and helped foster his interest in science. During this period he began collecting insects and plants and studying birds. It was through his study of birds that he met Josephine R. Michener, mother of the distinguished entomologist-biologist, Charles D. Michener, at meetings of the Western Bird-banding Association and he stopped at her home when he passed through Pasadena, once or twice a year. She obviously enjoyed his visits, frequently wrote or told Charles about them, and regarded him as an unusually pleasant and interesting young man. They discussed ornithological matters, birds that they had seen or banded, etc. She encouraged him and tried successfully to influence him to continue his interest in natural history. She thought he might go on to a scientific career in vertebrate zoology (ornithology), but she told Charles that she thought he was even more interested in a career in entomology. However, his first published paper, reporting the results of a bird census of Newport Upper Bay, appeared in Audubon Magazine in 1941, a later paper in 1947. In the late 1940's he conducted bird-banding studies in Berkeley, on the University's Oxford Tract, in collaboration with a fellow student, H. E. Childs, Jr. They coauthored a short paper describing a new multiple-catch bird-trap. Although Paul subsequently devoted his primary efforts to entomology, he maintained an interest in birds throughout his life. It is interesting to note that although Charles Michener had been hearing about Paul from his mother for years, he has no clear personal memory of him until he turned up at Berkeley among entomology students when he, Michener, was a graduate assistant.

Paul entered the University of California at Berkeley in 1940 with a major in entomology, paying his way from whatever work he could find locally. In 1942, he withdrew for war service, joining the United States Navy. He served in the South Pacific as a Chief Pharmacist's Mate, using periods of shore leave for collecting insects in the Solomon Islands. He was wounded in one of the naval engagements in the area and was awarded the Purple Heart.

Upon returning to Berkeley in 1946, he resumed work toward the Bachelor of Science degree and served briefly as a preparator for the departmental insect collections. As a graduate student working for his M.S. degree (1948) and a Ph.D. (1950) he held various teaching and research assistantships. In 1950 he was added to the staff as Senior Museum Entomologist. There, his enthusiastic drive and technical skills enabled him to make substantial improvements in the departmental collection.

During the summers of 1952 and 1953, he worked at Barrow, Alaska, as a member of a research team led by Professor Frank A. Pitelka and sponsored by the Office of Naval Research. Here Paul's expertise in bird-banding proved critical in studies of breeding and molt of two passerines, the Lapland Longspur and Snow Bunting. But his main duties were entomological—monitoring soil surface insect populations to define seasonal trend of change; examining stomach contents of longspurs, buntings and phalaropes to identify prey species and estimate their relative importance; and updating the knowledge of local insect fauna. This last service proved of general value, as even into the years of the International Biological Program for tundra (1969–1973), his faunal summary helped to guide field work in the Barrow area.

While at Barrow, much of Paul's sampling was done by means of an aspirator. About two months after returning from his last trip he became ill and during the next week living Coleoptera, Collembola, Diptera and Hymenoptera were passed from the left antrum of the sinus. An account of this remarkable and unpleasant experience was reported in *Science* (No. 20 of the appended bibliography).

In 1954, Paul was appointed Junior Entomologist in the California Agricultural Experiment Station to be responsible for the Berkeley project entitled, "The California Insect Survey" (now housed in the "Essig Museum of Entomology"). Paul later was given teaching as well as research titles and in 1965, before leaving Berkeley he had attained the rank of Professor of Entomology and Entomologist in the Experiment Station.

Early in this period (1956) Paul and Ray F. Smith of the Department of Entomology and Parasitology, Berkeley, proposed to the University's Associates in Tropical Biology, a program of investigation of fossiliferous amber in Chiapas, Mexico. The site had been reported to Smith by Franz Blom

and subsequently visited by graduate students. As a result, Paul and J. Wyatt Durham, Professor of Paleontology, visited the amber sites on a mule trip of 10 days that year under the guidance of Gertrude Blom, since Franz was ill at the time. Accounts of this trip were published by Mrs. Blom in *Pacific Discovery*, Vol. 10, pp. 8–14, under the title “On the Amber Trail in Chiapas” and the scientific results were summarized by Hurd, Smith and Durham (No. 55) as well as elsewhere. Smith had made a visit to Chiapas with Paul shortly after the first trip with Durham. According to Durham, Paul supervised much of the preparation of the contained fossil insects for study, assigned them to their proper taxonomic categories, and distributed them to specialists for study. The collection is maintained in the Museum of Paleontology, University of California, Berkeley.

Hurd’s contributions to the academic program at Berkeley were many and varied. The courses he taught or participated in at various times ranged from an introduction to the natural history and classification of insects to graduate research and seminars, as well as contributions to interdepartmental courses in biological sciences. Graduate students who received the Ph.D. degree under his supervision were Clarence D. Johnson, Evert E. Lindquist, Lois B. O’Brien, Gerald I. Stage, Wallace A. Steffan, and Marius S. Wasbauer.

An important aspect of Paul’s entomological activities at Berkeley was his work with students in the field. For many years he was in charge of the summer field course in entomology and frequently took collecting parties to various parts of the state in connection with his duties as head of The Agricultural Experiment Station California Insect Survey Project. He also led field trips of graduate and undergraduate students during the spring season to collect insects from various areas, particularly in the Mojave and Colorado deserts. These trips not only supplied excellent experience for the students but helped to provide the California Insect Survey with one of the finest collections of southwestern desert insects in existence and the best collection of California material housed anywhere. His own research projects not only involved these areas but took him into Mexico, Central and South America, frequently with support from the National Science Foundation.

On campus, Paul was active on a large number of administrative committees both in the department and elsewhere, among the most significant of which was the Chancellor’s Advisory Committee on Landscape Planning, which he chaired, and which had a profound influence in preserving natural areas and siting new buildings with a minimum of environmental impact. He also served on the statewide faculty committee advisory to the University Press. As a member of the 75th Anniversary Committee of the University, he introduced novel exhibit ideas, many of which are still evident.

His first sabbatical leave (1959–1960) was spent at Curitiba, Brazil, where he worked with Padre J. S. Moure, with the support of awards from the Guggenheim Foundation and Fulbright Commission. This experience not

only cemented a strong friendship between the two but initiated cooperative research programs which continued until his death.

In 1967, Paul took leave from the University to serve for two years as Associate Program Director, Systematic Biology, Division of Biological and Medical Sciences, National Science Foundation. Harve Carlson, who was then Director of the Division at the Foundation, recalls that Paul was soon integrated into the work patterns of the program and took over immediate evaluation of proposals in his area of expertise. His quiet and easy manner allowed him to enjoy the respect of the Division staff immediately. According to Dr. Carlson, Paul did an outstanding job during his period of service. The Program Directors and Division office tried hard but unsuccessfully to recruit him on a permanent basis, but being a dedicated scientist whose first love was research, he declined although tempted.

In August, 1970, Paul left Berkeley to accept an appointment as Curator of Apoidea in the Department of Entomology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. In July of the following year he was selected as the third chairman of the department for a 5-year term. Although departmental affairs always had first priority on his time, he continued his research program vigorously, spending available free time at the Museum and many hours at home in connection with the apoid section of the Hymenoptera catalog (No. 91). Working closely and cooperatively with the departmental scientific staff, he effected a reorganization which improved departmental operations. The first was the elimination of major divisions, such as Lepidoptera, Coleoptera and Neuropteroid orders. This freed those division leaders of subsidiary administrative duties and allowed them more time for research, curation and other Museum responsibilities. Another improvement was the transformation of the existing technicians' pool into a collections management unit to which were assigned a collections manager and several permanent and part-time technicians. This resulted in a reduction of the large backlog of unprocessed lots of insects as well as an improved capability for handling new incoming accessions. Paul suggested and helped develop an insect zoo as a temporary museum installation early in 1971. Later, during his chairmanship but under the supervision of T. L. Erwin, the zoo evolved into a permanent exhibit, one of the most popular within the Museum.

Paul's systematic and biological interests were broad, as reflected in the appended bibliography. While a student at Berkeley, his early entomological concern was primarily with wasps and his doctoral dissertation was on the California species of *Pepsis*, an interest that he pursued to a culmination in a revision of the Nearctic species. As his studies of aculeate Hymenoptera expanded, he gave more and more attention to bees.

In the field of systematics, if one had to select a most consistent focus, it would be on the carpenter bees (Xylocopinae). From a 1954 paper on a

polytypic interpretation of the California carpenter bee (No. 21), followed a year later by a treatment of the carpenter bees of California (No. 23), he proceeded to publish 12 more papers on this group of bees, significantly correlating biological characters with more traditional methods, before joining Padre Moure to produce in 1963 the classical book entitled, "*A Classification of the Large Carpenter Bees*" (No. 60). This publication is not only a landmark in the study of this group of bees, but a model of thoroughness and meticulous attention to detail that has not been equalled in any major apoid group. This treatment of the higher classification of the carpenter bees of the world was followed in 1978 by an annotated catalog of the carpenter bees of the Western Hemisphere (No. 89)—again a classic model for an insect group, which brought together in general form for the genus, and annotated form for the species, all the references and known information about the systematics, biology and morphology of the group. Although his shortened life did not permit him to complete career-long interests in the parasitic bees and megachilids, he was able to complete with colleagues shorter but equally comprehensive studies of smaller groups, such as the Oxaeidae (No. 88).

Paul's longtime interest in the flower relationships of bees was brought to focus by a National Science Foundation grant in support of a research program on the systematics, intrafloral ecology and evolution of squash and gourd bees (*Peponapis* and *Xenoglossa*) and their host plants of the genus *Cucurbita*. With the assistance of colleagues he pursued this study throughout their home areas in the Western Hemisphere south to Argentina, the results of which helped clarify the origins of domestic squash and the evolutionary history of wild species. In an attempt to introduce some of these bees to the Hawaiian Islands, he and A. E. and M. M. Michelbacher flew chilled adults to the islands of Oahu and Hawaii (No. 79), and provided larvae and pupae for introductions to Australia. The results of these efforts are not yet known.

Other important studies involving pollination ecology, included the creosote bush (*Larrea tridentata*) (No. 85, 86), now assuming significance in the management and development of resources in the arid southwest, and sunflower pollinators (No. 95), critical in the rapidly expanding crop production of the cultivated forms of *Helianthus*. All of these publications have been widely quoted in the literature of general biology as well as that of agriculture.

Late in 1970 Hurd and K. V. Krombein discussed the desirability of producing a new edition of the synoptic catalog of Hymenoptera in America north of Mexico (No. 9). They decided that the data base should be entered into the computer for several reasons. The catalog could be produced on the GPO Linotron from a special magnetic tape, and the data base could be manipulated to produce indexes in alphabetical order. Computerization would also permit manipulation of the data base to answer specific inquiries, and it could be expanded and updated continually to provide revised editions

of the catalog or parts thereof as needed. Hurd, together with Krombein and B. D. Burks, U.S. Department of Agriculture (later replaced by D. R. Smith, USDA) constituted the Editorial Board which established the protocol for the catalog and edited the sections prepared by the combined Smithsonian-Agriculture hymenopterists. Their editorial duties began in mid-1971 and finally terminated in 1979 with completion of the third volume of indexes. Paul was responsible for preparation of the section on Apoidea (No. 91) which required a large part of his available research time through 1976. His section has received critical acclaim from other bee specialists and from botanists working on pollination ecology. Subsequently, the Apoidea data base provided much useful information for the large work on sunflower bees (No. 95) undertaken jointly by Hurd, W. E. LaBerge and E. G. Linsley.

Because of his expertise in computer techniques, Paul began a series of annotated catalogs on the New World bees. The first on carpenter bees (No. 89) was by him alone. The second part with J. S. Moure on Halictidae has been completed except for the indexes which will be produced by computer manipulation. Hurd and Moure planned to complete the entire catalog in ten additional parts, but Paul had made no progress on these at the time of his death.

Several other projects are in press or nearing completion. Among these is a study of the bee pollinators of selected trees and shrubs of the southwestern deserts undertaken with E. G. Linsley and T. J. Zavortink. He also had in progress a revision of the cleptoparasitic bee genus *Triepeolus*. He had examined all readily available material, sorted it to species with names applied to all new taxa, and had a number of illustrations prepared by a staff artist. Paul had not begun to write up this study, but it is hoped that it can be completed by one of his colleagues.

Many other aspects of his research deserve mention, but space will not permit a fuller analysis, and the reader is referred to the appended bibliography for items of interest.

Paul belonged to a large number of professional organizations, many of which he served in an appointed or elected capacity. For example, as a member of the Pacific Coast Entomological Society, he edited the *Pan-Pacific Entomologist* for several years. In the Entomological Society of America, among other functions, he served on the Governing Board and chaired the important Advisory Committee for Systematics Resources in Entomology. He was President of the Association for Tropical Biology in 1969–70, and co-Chairman of the Program Committee for the First International Congress of Systematic and Evolutionary Biology for which he received the Congress Medal.

As might be expected, Paul was a member of several honor societies including Sigma Xi. He was also a Fellow of the American Association for the Advancement of Science and of the California Academy of Sciences.

Among his numerous professional activities, he served as Section Editor (Hymenoptera) for *Biological Abstracts*.

The Smithsonian Institution recognized his stature as an entomologist of world renown because of the superb quality of his scientific contributions. He was promoted to supergrade status in the Federal Civil Service in 1978, the third entomologist on the Smithsonian staff to be so honored. In 1980 he was appointed a Senior Scientist, one of only five in the Museum of Natural History.

Paul was elected to membership in the prestigious and exclusive Cosmos Club shortly after moving to Washington, and later he served for several years on the Admissions Committee. He greatly enjoyed his membership in this organization of men who have done meritorious original work in science, literature or the arts. Numerous small and even more exclusive groups of members have formed within the Cosmos Club. One such is the Friday Morning Cheese Group with membership limited to the first three departmental chairmen (J. F. G. Clarke, Krombein and Hurd). Every Friday those of us in residence went to the club for cocktails, cheese and crackers, followed by an advisedly light lunch!

He was also a member of the much smaller Washington Biologists' Field Club with headquarters on Plimmers Island in the Potomac River. He and Krombein collected there during 1971 and 1972, anticipating eventually that they would publish an annotated list of the bees, comparing the recent fauna with that collected more than 50 years earlier. Regrettably, this project was put in abeyance because of Hurd's many other commitments.

Paul suffered a severe heart attack in 1980, and was hospitalized for several months. After an extended period of testing various drugs, his cardiologist eventually found a combination that reduced his pressure to acceptable limits. Unfortunately the drug therapy had some adverse side effects, so that Paul became moody and very withdrawn during his last months. The side effects fortunately did not diminish his research interests or capability, and he drove himself relentlessly and incessantly, perhaps realizing that his time was limited. His fatal heart attack, from which he never regained consciousness, came at 5:20 a.m., just after he entered the Museum on Friday March 12.

He is survived by his wife, Grace Isabelle, a son, Philip James, and a daughter, Mrs. Katherine Lee Hartfield, all now of Austin, Texas, and by a son from an earlier marriage, Rodney Wayne of Berkeley, California.

We are grateful to Charles D. Michener for contributing reminiscences of Paul's early work with birds, to Frank A. Pitelka for information on Paul's work at Barrow, Alaska, to J. Wyatt Durham and Ray F. Smith for information about the Chiapas Amber Project, and to Harve J. Carlson for recollections of Paul's service with the National Science Foundation. We

are also indebted to Michener and Jerome G. Rozen for their helpful comments on a draft of this biographical sketch.

List of Taxa Named for Paul D. Hurd, Jr.

Paul was honored by a number of systematists who gave new taxa a specific or subspecific name based on his last or first name. Many of these taxa had been collected by Hurd himself. Such patronyms known to Paul are as follows:

COPEPODA

Parastenocaris hurdi Jakobi and de Loyola e Silva, 1962.

ACARINA

Amphicalvolia hurdi Turk, 1963.

Bdellodes hurdi Atyeo, 1960.

Charadracarus hurdi Newell, 1960.

Oppia hurdi Woolley, 1971.

HEMIPTERA

Dysmicoccus hurdi McKenzie, 1962.

Phenacoccus hurdi McKenzie, 1964.

COLEOPTERA

Anthaxia hurdi Cobos, 1949.

Cenocephalus hurdi Schedl, 1962.

Crossidius hurdi Chemsak and Linsley, 1959.

Cryptorhynchus hurdi Zimmerman, 1971.

Dactylozodes hurdi Cobos, 1976.

Nemognatha hurdi MacSwain, 1951.

Rhipiphorus luteipennis hurdi Linsley and MacSwain, 1952.

DIPTERA

Aphantorhapha hurdi Reinhard, 1959.

Apiocera ammophila hurdi Cazier, 1982.

Brunnettia hurdi Quate, 1950.

Cophura hurdi Hull, 1960.

Forcipomyia hurdi Wirth, 1952.

Lordotus hurdi Hall, 1957.

Metapogon hurdi Wilcox, 1964.

Phleomyia hurdi Sabrosky, 1959.

Phyllolabis hurdi Alexander, 1964.

Procolobstema hurdi Cook, 1971.

HYMENOPTERA

- Agathilla hurdi* Townes, 1967.
Ammophila hurdi Menke, 1963.
Andrena hurdi Lanham, 1949.
Anthocopa hurdiana Michener, 1954.
Brachycistis lacustris hurdi Wasbauer, 1966.
Calliopsis hurdi Shinn, 1967.
Ceratina hurdi Daly, 1974.
Cerceris hurdi Scullen, 1972.
Chelonus hurdi McComb, 1968 (1967).
Dipogon hurdi Evans, 1974.
Episyron quinquenotatus hurdi Evans, 1950.
Heterostelis hurdi Thorp, 1966.
Hylaeus hurdi Snelling, 1966.
Larropsis hurdi Bohart and Bohart, 1962.
Melissodes hurdi LaBerge, 1961.
Melissodes paulula LaBerge, 1961.
Microdynerus hurdi Parker, 1970.
Neolarra hurdi Shanks, 1978.
Nomada hurdi Evans, 1972.
Nomadopsis cincta hurdi Rozen, 1958.
Osmia hurdi White, 1952.
Oxybelus hurdi Bohart and Schlinger, 1956.
Paratiphia hurdi Allen, 1965.
Perdita hurdi Timberlake, 1956.
Plenoculus hurdi Williams, 1960.
Priocnessus hurdi Dreisbach, 1960.
Protandrena hurdi Timberlake, 1976.
Pseudisobrachium hurdi Evans, 1961.
Psorthaspis macronotum hurdi Evans, 1954.
Pterocheilus hurdi Bohart, 1950.
Scolia ribbei hurdi Krombein, 1963.
Synhalonia hurdi Timberlake, 1969.
Tachysphex hurdi Bohart, 1962.
Tiphia hurdi Allen, 1965.

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Paul D. Hurd, Jr.

Joint authorship is indicated parenthetically following the complete citation, e.g. (With W. F. Barr.) as in No. 2.

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3. 1947b. Redescription of *Agenioideus humilis* (Cresson) with notes on its biology (Hymenoptera: Pompilidae). Pan-Pac. Entomol., 23:132–134.
4. 1947c. Unusual winter visitants to Berkeley, California. Condor, 49:173.
5. 1948. Systematics of the California species of the genus *Pepsis* Fabricius (Hymenoptera: Pompilidae). Univ. Calif. Publ. Entomol., 8:123–150, 4 figs.
6. 1950a. Claude "I" Smith, 1922–1949. Pan-Pac. Entomol., 26:132–133.
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9. 1951a. Genus *Pepsis* Fabricius. In Muesebeck, Krombein and Townes, Hymenoptera of America north of Mexico—Synoptic catalog. U.S. Dept. Agric., Agric. Monogr., 2:909–910.
10. 1951b. The history of the Pacific Coast Entomological Society. Pan-Pac. Entomol., 27:97–119, 4 figs. (With E. O. Essig et al.)
11. 1951c. The California velvet ants of the genus *Dasymutilla* Ashmead (Hymenoptera: Mutillidae). Bull. Calif. Insect Surv., 1:89–118, 1 pl.
12. 1951d. The female of *Pseudomethoca anthracina* (Fox) (Hymenoptera: Mutillidae). Pan-Pac. Entomol., 27:156.
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14. 1952a. The Scoliidae of California (Hymenoptera: Aculeata). Bull. Calif. Insect Surv., 1:141–152, 2 pls.
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22. 1955a. The megachiline bees of California (Hymenoptera: Megachilidae). Bull.

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Footnotes

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